

H.W. Bigelow (H.J. Jr.)

NOTES

FROM

CLINICAL LECTURES ON SURGERY,

DELIVERED AT THE

Massachusetts Medical College,

DURING THE

SESSION OF 1850-51.



BY HENRY J. BIGELOW, M.D.

Professor of Surgery in the College, and one of the Surgeons of the Mass. Gen. Hospital.

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NOTES FROM CLINICAL LECTURES ON SURGERY.

MONDAY, Nov. 11, 1850.—The present hour is allotted to the purposes of clinical instruction ; to the consideration of cases of surgical disease in the details of their history, immediate antecedents, symptoms and treatment. This is a mode of study which has been before alluded to, and is opposed to the abstract and general account of disease adopted by the general treatise. It is, indeed, the natural method of study ; the order in which experience presents itself to the surgeon, and in which it should be made to present itself to every student of this science. There is no substitute for it. Yet we find that when two similar cases have offered themselves to previous observers, it has happened that something common to both has been drawn from them, and that a generalization has been thus made ; and it would be obvious folly not to avail ourselves of the knowledge and teachings of those who have thus previously observed. Clinical study, therefore, proposes to itself not only the examination of a detailed and isolated case, but also contemplates its relations with other similar cases. It investigates the eccentric biography of some particular instance of disease, with constant reference to the usual and common history of the same disease, gauging by this standard the irregularities, and endeavoring to reconcile to this standard the anomalies, of each recurring case. Our clinical study will be confined to the cases we have observed together during the visits at the Mass. Gen. Hospital ; an institution which has no superior, and which offers great facilities for the observation of surgical disease. It will be found, at the end of our term, that a very large proportion of the usual surgical affections will have passed under our notice, and in the common relative frequency of their occurrence in the routine of daily practice. And let not the graver and striking cases claim too large a share of your attention ; these are not the cases which you will meet with in your daily professional walks. But it is the minor and seemingly slight and trivial ; the chronic,

unchanging and unattractive lesions, which will fill the sphere of your daily avocations, and upon the management of which will depend your comfort and success. In addition to the surgical cases occurring at the Hospital, it will be my duty to notice the surgical operations there performed before the class; and this naturally leads to the consideration of the anaesthetics so constantly at those times administered.

It is a little striking that those who are in the daily habit of administering anaesthetics for the slight operations of dentistry, or in midwifery, are often startled at the violent or seemingly dangerous symptoms which sometimes result from the administration of the dose required for protracted operations; but I believe that any one who shall have witnessed these effects during a brief period at the Hospital, and who shall have learned their true relation to the anaesthetic state, especially in point of danger, will feel himself at home in administering the ether in any emergency whatever. I use common ether (sulphuric). Chloroform has killed people. There is sufficient evidence that patients in good health, to whom chloroform was administered in the ordinary way and with ordinary care, have become pulseless, dead, suddenly and without warning. Such accident has either never happened with ether, or is excessively rare. Chloric ether, dilute chloroform, blisters the skin, which requires abundant oil to protect it. So that, on the whole, common ether is safest, cleanest, simplest, and is, indeed, apart from its odor, a perfect anaesthetic.

CASE I. Extrophy of the Bladder, &c.—This remarkable case, although not from the Hospital, is accustomed to offer himself for examination here, and elsewhere. I have seen but one other similar case. The first feature which strikes us is the red, raw and inflamed mucous surface of the posterior wall of the bladder, which is protruded through an orifice in its anterior wall as large as a moderate-sized apple, and thence through the abdominal parieties. It is thus literally turned inside out; and exhibits the ureters dripping with urine, and below, two orifices, which the patient states to be, and which I dare say are, the termination of the spermatic ducts. To complete this median division of the tissues, there is entire epispadias of the penis and of the gland; and the bones of the symphysis pubis gape to the extent of many inches. You will observe, besides, an inguinal hernia, produced, very likely, by a laxity of tendinous fibres which have no firm insertion.

This is an instance of the failure on the part of nature to unite the lateral masses of the body upon the median line, and bears analogy to

certain other deformities, such as hypospadias, hare-lip and spina bifida. It is incurable.

CASE II. *Epithelial Disease of Lip.*—Commonly called cancer of the lip, and with good reason; for although the affection is by no means identical with cancer, yet it has practically many of its destructive properties. It affects the skin and subjacent cellular tissue, the mucous membrane, and the muscle. The man operated upon on Saturday, was about 52 years of age, healthy, and of a fleshy make. Two years ago he discovered a pimple of the size of a small pea on one side of the free edge of the under lip. A year ago this had attained a double size, and was covered on the buccal margin with a scab of ordinary appearance and of the size of a half dime. This patient had been treated, as such lesions often are, by some cancer doctor with caustic; but ineffectually. I removed the mass by a V shaped incision in the sound tissue, and the edges were approximated by three or four sutures. The great object here is completely to excise the disease: and if this is done, it has little tendency to return; differing in this respect from true cancer. Now the latter disease may affect the lip as well as other regions, and hence the importance of establishing distinctly the difference between the two diseases, that you may be able with confidence to assure your patient of his probable future. And first let us eliminate the advanced stages of this disease, where the bone is eroded and the glands affected. In such cases extensive plastic operations are sometimes necessary. I have removed the entire lower lip, dissecting the cheeks back to the facial artery of each side, and uniting them when drawn forward upon the median line. In this case the disease returned in the cicatrix a year after. In such cases the vast ulceration and fungoid growth may alter the general appearance of the texture to a degree which may render its appearance, without the microscope, equivocal. But in its early stage the epithelial disease of the lip generally shows upon section, as in this case, a dense white opaque color, and often upon minute examination, as here, vertical striæ dividing it into apparent columns, which either terminate at the free labial edge, disintegrating into a paste which furnishes a scab, or may rise above it, to a considerable height. But the microscope leaves no doubt, in the majority of cases. I will not say all cases; for though some observers have no question upon this point, I have not satisfied myself about it. In most cases the field, as in the present instance, shows unequivocal epithelial features. The white caseous mass shows the normal epithelial cells and scales; every irregularity of the

latter varying in size and shape; while the distorted cells often attain, with and without nuclei, enormous size. A careful observation also detects little groups of the minute cells in the first period of their growth.

Such is the common disease "cancer of the lip," beginning with a small purple crust or scab, and if not removed in season, attaining an ulcerated growth, which compromises the life of the individual; perfectly curable at first, but if neglected or tampered with, getting beyond the reach of surgical art.

CASE III. *Hare Lip.*—This patient of my friend Dr. Hayward was a boy of 8 or 9 years of age, presenting the ordinary appearances of a bad single hare-lip. The fissure reached the left nostril, dividing also the hard and soft palate in the mouth. You observed that the division of the lip was a little to one side of the median line. It is always so, with very rare if any exceptions. The front teeth also often project, as here, where one had been recently removed. The edges were refreshed and brought together by sutures. We rarely use pins, though they were once thought essential. Sutures answer equally well, and are more convenient. The upper one, as in this case, should be carried well up into the nostril to prevent a gaping and ugly orifice there. It may be added, in respect of these sutures, however unscientific the avowal may be considered, that with a healthy patient and good atmosphere, sewing skin is much more like sewing cloth than is generally supposed. It is better to add stitches enough to adjust the parts exactly where nicety is required, than to omit them and trust to nature to do it. In the latter case the gaping insterstioe gets filled with lymph, leaving a broad cicatrix, or an edge projects: so that altogether we are less sure of the result than when the edges are everywhere nicely adapted and brought together as has been described. I never saw an operation for hare-lip which did not leave a slight notch or fold at the edge of the lip. In fact, the longitudinal contraction of the cicatrix would produce this, but you may avoid it almost entirely by paring the free edge well down to the mouth; let the cut surfaces be concave rather than convex towards each other; and dissect up the flaps from the jaw enough, especially in infants, to abate the lateral traction. Finally, remove the stitches with the first trace of suppuration in their track, or you will have scars to mark their position. This operation of Dr. Hayward will probably make an excellent lip. In regard to the cleft palate of this boy, where it is so wide, it is unfavorable for operation. I have produced, contrary to my expectation, a good union of the posterior portion, in a similar case, but the palate was after-

wards hard and tense from the contraction which ensued upon the large lateral dissection necessary to disengage the scanty flaps. The cicatrix was very different from the pliant and serviceable palate which we often have after operation, where the cleft is not so wide.

CASE IV. *Removal of Cicatrix of Neck after Burn.*—Some of you have before seen this enormous cicatrix of the neck and breast. The patient was burned by the ignition of matches in his vest pocket. Last year I divided a bridle of the neck, and with real relief to the man. Why it did not again contract, it is difficult to say ; but the fact is, that he could raise his chin considerably better, for the operation. The whole matter of the contraction of cicatrices is uncertain. Some diminish almost to obliteration. Others remain loose and pliable without contraction. Lymph has doubtless much to do with it ; but we generally cannot assign the direction of contraction. Some parts of this scar were exquisitely and finely plicated ; while other parts present large welts, much like cheloides. One of these, about the size of a finger, and the seat of troublesome suppuration, I removed before you on Saturday, from the lateral hyoidal region. Such masses of lymph are usually of feeble vitality, but this was nourished by eight or ten small vessels, requiring ligature. The wound has gaped widely, and the motion of the head is free. Without over-estimating the chances of relief, we may aver that, as the wound cannot contract to smaller dimensions than before, and as the fibrous and contracting lymph is entirely removed at this point, we have every hope for the kind of improvement which before resulted.

CASE V. *Tertiary Syphilis. Ulcer behind the Left Leg on the Calf.*—This patient, a middle-aged, healthy man, had chancre fifteen years ago, and again Sept. 1849, for which he treated himself, but subsequently took pills for a long time from a physician. Two months after the primary sores, he had rheumatism of the right wrist and knuckles. Soon after, scabs upon the hairy scalp, accompanied with commencing and discrete eruption of pimples elsewhere on the body. Some of these pimples became large, and covered with a scab, while the left leg was subsequently the seat of a considerable ulceration, which had attained the size of the palm of the hand, and was preceded by a subcutaneous tubercle. I will only remark of this case, that its progress is somewhat anomalous. The deeper forms of cutaneous eruption, the tuberculo-crustaceous eruption of transition from secondary to tertiary disease, and especially the tertiary ulcer of the skin, resulting from the “*tumeur*

"gommeux," belong to a later period of the affection than that at which they have been manifested in this case. It is hardly worth while to go back 15 years for the primary affection, though a period even as long as 20 years has been assigned as a limit of tertiary disease. There is reason to believe that the patient has undergone mercurial treatment, which may account for the absence of some of the usual forms of secondary affection. The view which has been adopted in relation to this case is confirmed by the rapid cicatrization of the ulcer under the specific treatment of tertiary disease, viz., the iodide of potassium in considerable doses, here increased slowly from five to ten and fifteen grains, three times a day, and for a length of time. The patient will be soon well.

NOVEMBER 16th, 1850. CASE I. *Traumatic Ectropion*.—A middle-aged man, in good health, stated that, 9 years before, he first perceived a small pimple upon the lower lid of the eye, which gradually enlarged until it had attained the size of a large pea. A few months ago, it was treated with caustic by a quack, when the entire eye became inflamed to a degree resulting in its disorganization and in its adhesion to the remaining fragment of the lower lid. The lid is everted, and in this position suspended, tense, between the eyeball and cheek; the patient wearing a poultice over the whole, for the relief it affords him. In this case the ocular globe was incised for the purpose of allowing the escape of its useless contents, and in the hope of inducing by its atrophy a contraction and diminution of the exposed conjunctival surface. This was done by Dr. Hayward, whose patient he was.

CASE II. *Inguinal Hernia. Treatment by Injection*.—This subject seems to possess some little general interest. The disease is common, and the surgeon is often applied to, to know how far it may be cured by injection. This method of treatment is not new. In his work on Operative Surgery, published in 1846, Dr. Pancoast states that he had employed it eleven years before that date. The operation consisted of an injection into the sac of a stimulating fluid, by means of a minute trocar and canula, to which a syringe was afterwards adapted. This writer mentions Lugol's solution of iodine, or the tincture of cantharides, in quantity from half a drachm to a drachm, as the injection used. Neither is there anything new in attempts to obliterate the ring by adhesion or

destruction of the sac. Such were, in the latter part of the last century, the ligature or excision of the sac and testis, by which "the bishop of St. Papoul found that more than five hundred children had been castrated in his diocese"; and the *royal stitch*, which embracing the sac, preserved the testis to fulfil its legitimate function of making subjects for the king; and later, the operations which plugged the ring with a piece of the scrotum, and that which irritated it with gelatine threads, or acupuncture, and others, which have been for the most part abandoned.

The present patient, a young man of 21, healthy and of good habits, has had a left inguinal hernia for three years. Within the last year he has worn a truss, the hernia being often troublesome and tender notwithstanding. It is now, when allowed to descend, an enterocoele of the size of a goose egg, easily reducible, the ring readily admitting the middle finger; and under these circumstances the patient applied for a radical operation. I stated to him that the operation was not dangerous; that it probably would not cure him, though it might alleviate the inconvenience; the last perhaps greatly, perhaps not at all. The instrument used, and which was made for me several years ago, consists of a minute silver syringe terminating in a fine tube. The latter carries at its point a perforated trocar, which serves at once to make the puncture and to deliver the injection. With this instrument, twenty-five drops of tincture of iodine were deposited at the ring itself, through a puncture in the skin made with a tenotomy knife. I will not undertake to say that I injected the sac. When the sac is thin, I do not believe it possible to say whether the instrument enters the sac, or whether it pushes the sac before it. You may perhaps transfix it literally; but there must be, in general, an uncertainty whether the injection actually penetrates the sac, or only bathes its exterior; and practically the difference, in producing inflammation, whether from contact or from continuity of tissue, must be of no great importance. The result of the operation may be considered as a question of theory and of fact. This process aims to obliterate or plug the ring by an effusion of adhesive lymph. Now the cause of hernia is a want of resistance in the tendon; and as we cannot make new tendon, the question is, how far lymph is capable of supplying its place. Lymph is a plastic material; liable to great absorption, and having a tendency to yield to pressure. It has very little of the resisting property of tendon. Most patients are obliged to wear a truss after the operation for strangulated hernia, which creates a considerable effusion of lymph. The tendency of most

irreducible herniæ, where the ring is plugged by its adhering contents, is to increase. But theory should never stand in the way of fact. If it were possible to get at a series of statistics of this operation, the result would be conclusive. But in the absence of these, I will give the grounds for my own conclusions in respect to it.

1. I have operated in a number of cases, sometimes with relief, sometimes with none. In one case of a young child, the pressure of a light truss after the injection of ten drops tr. iodine, produced a small slough of the integuments.

2. I have been not unfrequently applied to, in common with other surgeons, by patients who had undergone the operation once, or even twice, to know what benefit would be likely to result from an additional operation.

3. A maker of trusses informs me that he frequently receives applications for trusses from patients unsuccessfully operated on ; or where the relief was only temporary. On the other hand, it is quite probable that lymph diminishes the size of the tendinous aperture in certain cases, and sometimes to a considerable degree. In fact, I know patients thus operated upon several years ago, who believe that the liability to a descent of the hernial contents has been materially diminished in their cases, and who consider their condition improved by the operation, though they still wear a truss.

Now under these circumstances, if there is no great danger attending the operation, it is justifiable ; and I never heard of a fatal result from it ; though peritoneal inflammation is occasionally quite considerable. So that a patient who desires to encounter this operation, not dangerous in itself, for a chance of obtaining greater or less relief from an inconvenience, may be gratified.

CASE III. *Congenital Hypertrophy of the Middle Finger. Amputation.*—This extraordinary deformity occurred in a fine healthy young girl of 16. The finger is truly enormous, measuring $5\frac{1}{2}$ inches in length and the same in circumference at its base. I removed the finger, and with it about three quarters of an inch of the head and shaft of the metacarpal bone. (The details and result of this case will be published at another time.)

CASE IV. *Pott's Disease of the Spine. Death.*—The boy whom we saw on Saturday, moribund, died in the course of the day. He has been for some weeks getting steadily worse, and within a few days quite

helpless, sleeping most of the time except when roused. I have at all times restrained from minutely examining his back, as he was beyond the reach of art, and the great object was to make him comfortable. He entered the House on the 10th day of October last; and his back at that time presented an angular curvature of about 115° , the prominent vertebrae being the 3d and 4th lumbar. This deformity showed itself, as the patient states, six years ago, but he has had no especial pain or disability till within a few weeks. Seven weeks ago a swelling upon the left side of the rectum broke, discharging pus. Another abscess was also detected at the patient's entrance, above the projecting vertebrae and to the right side, which opened spontaneously and with profuse discharge a week before death. There was also marked tenderness over the 6th and 8th dorsal vertebrae. It is a striking feature in this case, that so long a period should have elapsed between the original appearance of the deformity and the subsequent grave symptoms. This is unusual, but sometimes happens. To account for the recent and large secretion of pus, we may suppose either that the inflammatory action of disease, which had been for six years nearly stationary, was suddenly renewed, or that it had invaded the bodies of other vertebrae. The last hypothesis receives some confirmation from the position of the pus in the lumbar region, which was a little above the original lesion, instead of gravitating as usual to a depending point below it; and also from the tenderness of the middle dorsal vertebrae. These, however, as yet presented no deformity; and both foci of the disease, if there were two, doubtless contributed to the supply of pus which was delivered at the fistulous openings; in the one case at the seat of the disease, in the other upon the lower part of the nates, having probably escaped from the cavity of the pelvis by the sciatic notch.

Remarks were also made upon the following cases, which had been discharged from the House.

CASE V. *Varix.*—This patient had been successfully treated by caustic, and had also been subjected to various applications for the eczematous or chronic inflammatory affection of the skin of the leg, which often accompanies varix.

CASE VI. *Extensive Cicatrices of Legs after Burn from Gunpowder.*

CASE VII. *Compound Fracture of Leg. Amputation four Months since. Stump healed.*

MONDAY, November 25th, 1850. *Meliceric Cyst in Forehead. Operation.*—This patient, a healthy young man, about 25 years of age, and from the wards of Dr. Hayward, presented a tumor about the size of a horse-chesnut over the left eyebrow. He stated that it had existed from birth, but that it had doubled its size within a few months. Upon examination, it proved to be moderately soft and fluctuating; and from its *feel*, might have been a bag of fluid, or a common fatty tumor. And yet you could be tolerably sure of making a correct diagnosis in this case. In the first place, a sac of any other fluid than the caseous mass which this proved to contain, is very rare in this place. For example, a cyst containing pure serum, or glairy fluid, in the cellular tissue, is quite rare. Neither is chronic abscess, another alternative, likely to exist from birth, or without some of the inflammatory symptoms which were wanting here. Fatty tumor, which is sometimes fluctuating, has generally a lobulated feel somewhere, which this had not. I examined this patient carefully at my house, before he entered the hospital. There was a uniform fluctuating mass above the brow, bounded at its inner side by a remarkably long pecten ridge. Now several years ago I removed a similar congenital tumor from a child of three years of age, situated deep beneath the temporal muscle, and found it imbedded in just this way, in a depression which it had formed for itself in the temporal bone. So that these tumors, when congenital, may imbed themselves at a very early period in the thin, soft adjacent bone—remaining, as in the present case, comparatively inactive for a number of years, and suddenly expanding in a few months, so as entirely to outgrow the original accommodations. When a cyst thus rapidly increases, its enlargement, in several I have removed, seemed to be from an increase of its serous rather than of its solid contents. In this case it was not so. The whole material had increased in quantity.

Apart, however, from any peculiar evidence, encysted tumors are very common in this region; upon the lid, in the orbit and about it; so that a tumor here which presents nothing incompatible with the hypothesis, and which suggests no other especial growth, may be fairly set down as of this character.

By "encysted tumors," I mean a distinct bag or cyst, containing this peculiar caseous, soft, white material. Serous cysts (if we except "hydrocele of the neck") are excessively rare. Cysts containing glairy fluid (if we except the bursa) still more so. Nor should the term "encysted" be applied to those hard or fatty tumors which happen to get surrounded by a little condensed cellular tissue, from which they "peel out." The true

"encysted tumor" is very common, and being quite distinct from other growths, should have a monopoly of the name. It is said to contain either *atheroma* or *meliceris*—very ancient words, which often convey no distinct idea. Yet these terms are really very descriptive of the two varieties of the contents: the former signifying *pap*, the latter *honey-wax*; by which is meant, I believe, not clear honey, but chilled or frozen honey, which it greatly resembles. They are in pathology nearly identical; but *atheroma* readily mingle with water; *meliceris* is waxy, sebaceous or oily, and sheds water. *Atheroma* is a watery fluid, filled with little plates or fragments of epidermic material, sometimes as large as grains of rice, and of a semi-translucent white. Under the microscope this shows numberless epithelial scales, of which these masses are composed; sometimes nucleated, sometimes not, and often very irregular. In *meliceris*, on the other hand, though there may be serum present in small quantity, yet the cells adhere to each other by a tenacious sebaceous matter or concrete oil, and at least in four among the tumors of this sort which I have removed, and of which I have retained a careful microscopic record, there were no scales, but in their stead beautiful translucent oval cells, a few of them nucleated; and occasionally, as a few in this case did, presenting irregularities in form, and some being of minute size. Their usual diameter is rather less than that of an epithelial scale, and they are seen imbedded in and inseparable from the granular sebaceous oily mass, when the field is filled with water; but substitute oil for the water, between the glasses, and these granules are at once dissolved, the cells coming out clear and clean into the field, and being the most truly beautiful cells I have ever met with among morbid growths. They are almost hyaline, and may be rolled about like little bladders. In one case they partially collapsed upon the contact of oil, as by an instantaneous exosmose. The gross mass looks like lard at ordinary temperatures, and is sticky and greasy to the touch.

The cyst of *meliceris* and *atheroma* is sometimes lined with a beautiful epithelium. Sometimes the epithelium is irregular and rough. In two cases, at least, of *meliceris*, the epithelial lining was only partial—the rest of the surface being moist and divested of integument. This last character may perhaps have some influence in determining the quality of the secretion; whether watery, or sebaceous and waxy; whether epithelial scales, or those large and beautiful epithelial cells.

These cysts sometimes attain large size. I have one that I removed from the shoulder, which held a large tumbler full of *atheroma*. Sometimes they point and burst, subsequent inflammation then obliterating the

sac—or it remains open. But usually the whole sac requires extirpation, as in this case, where, after puncture, the sac was dissected out by Dr. Hayward. A small portion when left is sometimes obliterated, but sometimes gives rise to new secretion ; so that it is better in operating to wait for the bleeding to cease and to explore the wound for the whole sac ; especially in the lid, where the bleeding at first obscures everything. About the orbit these tumors are very liable to be adherent to the bone ; and congenital tumors thus situated, have, in several cases which I have recorded, proved meliceric and not atheromatous. Of their cause we know nothing. Astley Cooper thought that they were obstructed sebaceous follicles. Lebert states that they contain all the products of these follicles. This they certainly do, and in addition, often hair, free and attached ; but they are often deep, and seem to me to have also other analogies than those offered by the sebaceous follicle.

CASE II. Hydrocele. Radical Operation.

CASE III. Hydrocele. Radical Operation.

These two cases were average instances of the disease ; being each about the size of a small fist, elongated in their vertical diameter. As to establishing a diagnosis upon the external outline, pear-shaped or other, which these accumulations of fluid present, it is very uncertain. Their great test is translucency. A common hydrocele is translucent. These were perfectly so. When I first examined the elder of these patients, I felt a distinct series of irregularities upon the posterior surface of the sac, like indurated veins of varix or some other unsrequent accompaniment of the affection ; but transmission of light showed that there was no varix, and that the convoluted feel was only accidental and in the fibrous parietes. These things are sometimes very deceptive. I once treated a perfectly hard and knobbed string of tumors upon the cord, by leeches, there being some pain, and as I had no doubt of their solid character. There was no approach to fluctuation. As a mere experiment, when I saw the patient again I placed a lamp behind them, and they proved to be perfectly transparent ; constituting hydrocele of the cord ; the unobliterated tube which the testis drags after it to the scrotum. To examine it properly, you should grasp the scrotum behind, and drawing it tense over the tumor, look through your hand or a roll of paper or a stethoscope placed upon the shaded side, while the other is illuminated by a lamp, or, what is better, by strong sun-light. And it should be borne in mind that pus, or bloody fluid, or walls greatly thickened with lymph, are not unsrequent and are opaque.

They must be judged from other evidence. You may have noticed that in the elder of these patients the testis seemed to be a distinct mass appended to the bottom of the tumor, instead of being, as usual, imbedded behind it, and from a quarter to a third way up. This was probably from an accidental adhesion of the tunica vaginalis to the front of the testis, which prevented the sac from being distended downwards and forwards.

The history of these two cases illustrates well the varying progress of the disease. The affection of the middle-aged seaman dates from 12 years, and has never been operated upon. That of the young man of 21, is of only three years duration, and I have drawn the water from it twice before. The contents of the former are a pale thin serum, becoming only cloudy upon the addition of nitric acid. That of the latter a thicker bright yellow fluid, containing abundant albumen, the whole being stiffened as you see by the acid.

It is unnecessary to speak of the numerous methods of exciting inflammation and the exudation of lymph with a view to the obliteration of the cavity. Port wine and water, which sometimes produces sloughs of the cellular tissue, has been pretty generally abandoned for T. Iodine, which does not. I have often seen Velpeau fill the sac with water containing one third T. Iodine. It was rubbed about in the sac until painful, and then allowed to escape. Another way, and that which I adopted in these cases, is to inject a drachm of T. Iodine in two or three drachms of water, and to leave the whole in the sac for absorption. This method seems to be as effectual and safe as any other for the average cases of the affection in adults. You observed that it excited, as often happens, considerable pain in the course of the cord and in the loins, especially in the case of longer standing, where the water had never been drawn off. The testis will probably swell, perhaps largely; flocculent serum will be effused into the sac, as into the thorax in pleurisy, and when absorbed will leave corresponding adhesions of the organizable parts of the albumen; which is the object of the operation.

The patient with wound of the eye has been discharged, at his own request. The organ was no longer painful, and there is here less reason to apprehend sympathetic inflammation of the sound eye than if the inflammation had been of an idiopathic or morbid character. When such sympathetic inflammation comes on, and it is one great reason for not advising the operation for cataract upon a single eye when the other is sound, it is usually at a later period than this lesion has yet reached; usually in the neighborhood of the fifth week.

CASE IV. *Inflammation of the Gums. "Inflammatory Absorption."*—This patient, whom you have several times examined, has been discharged—a middle-aged man; in whom, without assignable cause, a toothache of the first left incisor, five weeks ago, was followed by pain in the upper jaw, which in a week presented a double ridge of swelled gum almost burying the teeth and suppurating freely. The teeth, from the right canine to the left molars, were quite loose; abscesses had formed here and there along the gums, while the face was swelled and oedematous. The treatment consisted of cathartics, free local incisions, astringent washes, and the gum was occasionally touched with muriatic acid. The affection has greatly abated, though the teeth are still far from firm.

CASE V.—In the corner of the east male ward you saw on Saturday a patient, an otherwise robust mechanic, aged 24, with a remarkable tumor in the left groin; a deep-seated mass as large as the two fists, rising considerably above the surface, its base measuring five by six inches, and surmounted with abundant convoluted veins. The leg of that side was also very large; the calf measuring four inches more in circumference than the right. The whole surface of this leg is purple, with dilated venous capillaries: and upon the external aspect, varicose veins, with several considerable ulcers of the leg, probably resulting from them. This excessive oedema, the varix and ulceration, are doubtless the result of compression of the veins at the groin, as the mass lies directly upon them, involving Poupart's ligament. From his account, the patient first discovered a small tumor in the groin four years ago, and, at the same time, swelling in the leg, both of which have slowly increased; yet he kept at work till the appearance of the ulcers, four months since.

What is the character of this tumor? Upon its surface is a large and solid handful of varix, easily compressed, and leaving no doubt of its character. Beneath this is a mass of lumps, some adherent to each other, others moveable, and varying from the size of a kidney bean to that of an English walnut. These are doubtless enlarged glands. Exploring the inguinal ring, we find it free from hernial protrusion. The saphenous opening, as far as we can reach it through the swelled integuments, is equally free from crural hernia. This tumor lacks the thrill and the pulsation of aneurism, of which enlarged glands are no regular feature. There is neither elasticity, nor is there any lesion elsewhere to lead us to suspect chronic abscess. It is not a fatty tumor. The fibro-albuminous or sarcomatous tumor I have never known to in-

fect the neighboring glands. There is no acute inflammation. Probability then settles between two alternatives; either a disease which does tend to affect the glands, or an idiopathic affection of the glands themselves. It has occurred to me whether some diseased enlargement of the leg may have infected these glands: but I know of no such disease; nor is there here any circumscribed affection in the leg or thigh; which besides has grown much smaller for bandaging, while the ulcers have nearly healed. The groin is probably the seat of the original lesion, and the swelled leg an effect of it. Now cancer in its various forms infects the glands as a primary disease, or is secondarily absorbed into them from the neighborhood; and this is not a very uncommon place for it. I have seen three cases in the groin which I supposed cancer, in one of which it arose from the femur near its head. But in those cases there was more of a principal central lesion to which the glands seemed to be satellites. Here we have a confused mass of glands more or less distinct, as deep as we can feel them, and no principal mass till we get very deep. There is also less tendency to mutual adhesion than I should think common in glands which have absorbed cancerous cells.

Idiopathic cancer of an absorbent gland itself, in three cases I have seen in the neck, inside of the elbow and groin, was more confined to the single affected gland, which grew to the size of a goose egg and larger, while the neighboring glands were but slightly enlarged, if at all. So that this tumor wants some of the usual features of malignant disease. On the other hand, what is called "chronic inflammation of the glands," does present a very similar chain of tumors. They often occur in the neck, and on section exhibit the enlarged and red gland beautifully spotted or divided with patches of dense opaque, straw-colored lymph, infiltrated into its tissue. I have never identified these in the groin, as in the neck where they are occasionally extirpated, except as scrofulous abscess, after they have become fused and suppurated, in which state they are brought to the surgeon.

I think we may be satisfied that this tumor comes into one of these two categories; but I believe it to be impossible to decide, at present, which. We shall doubtless know more of it from its future manifestations. In the mean time, the leg has been bandaged and placed at rest in a horizontal position, with great relief and diminution in size. For the present, iodine will be administered internally, and cautiously applied without.

MONDAY, DEC. 2d, 1850. CASE I. *Fistula in Ano. Operation.*—This patient experienced, in the history of his affection, a longer interval than is common, between the first appearance and the discharge of the abscess. It appeared spontaneously by the side of the rectum two years ago, and at the expiration of two months projected an inch or more, before breaking. It is often asked whether an abscess in this region is necessarily what is called fistula in ano; or, in other words, whether an abscess may exist here without the usual tendencies of this troublesome affection. You will find in the books that a spontaneous cure in this place, as of a boil elsewhere, is excessively rare. I have seen one such case; but I incline to believe that there are surgeons of larger experience who may not happen to have seen even one. It was in a young man in whom a tender induration at the outer margin of the sphincter broke, about the third day. The probe entered three quarters of an inch, but the excessive tenderness of the part caused the operation to be deferred, and the opening healed by the fifth day after. This occurred at least two years before the use of ether, and the patient has had no trouble since. Such a case is rare, and an abscess by the side of the rectum generally requires the operation for, and practically is, "fistula." If we adopt Brodie's view that this abscess is always caused and perpetuated by the escape of faeces through a little ulcer of the mucous membrane lining the sphincter, we have a constant and peculiar condition connected with it; and which prevents its spontaneous cure. Brodie thinks this is the cause of their duration, rather than the friction and motion of the sphincter and levator; and, as a natural result, urges the necessity of finding this internal perforation and of making the incision through it in order to obliterate it. Against these views of this most distinguished surgeon, it may be alleged that a surgeon is generally called upon to operate without the "three or four examinations" which he finds to be sometimes necessary for the discovery of the internal orifice; and that in the event of not finding it, it is common to perforate the mucous membrane with an artificial opening, and that such cases usually get perfectly well. In this case the internal orifice was readily found at its usual place about half an inch above the external sphincter. A few days ago, in another case, I found the ulcerated orifice in a less common position, at the extreme head of the sinus and of the sphincter, and opening into the dilated gut above. The usual position of the internal fistula directing exploration, the hole being found and the incision made, it remains to be settled what is to be done with the upper part of the sinus, which, as in this case, often

runs an inch higher up. Brodie advises that it be left. This one I slit with scissors to the extent of half an inch, as it was deep, and there was no especial reason for not placing it in the category of other sinuses. In fact, it is common to divide such a sinus with caution. There is a chance of hemorrhage from vessels you cannot reach. But when the wall is thin, you may feel, with the finger in the anus, the hemorrhoidal arteries in its substance, beating, and avoid them. There were none here; but in a case a year ago, where such a vessel was high up, directly below the upper orifice, I passed through the latter a wire of pure silver, which will twist without breaking, and let it cut its way out. Then there are not unfrequently sinuses outside, extending laterally upon the nates, sometimes to the tuberosity, or in front to the scrotum. A recent or tender one may be left to itself, the sphincter being divided; but a chronic or indurated one had better be laid open, as in the present case; where such a sinus having been opened by the patient himself with a penknife, had been frequently touched with caustic and had become greatly indurated. The patient, who seems to have studied the subject, desired that it should be dissected out; but it will now doubtless granulate on exposure to the air. The operation, apart from the chance of hemorrhage, is, as you saw, inconsiderable. A finger in the anus meets, at the inner fistula, a probe passed into the sinus. Now you may follow the probe with a narrow blunt-pointed knife, and make it cut its way out, resting on the tip of your finger; or, which is easier, and which I did in this case, drag down the tip of the probe or director through the anus, and slide it over upon the opposite side of the nates. The mass is then exposed, lying upon your instrument, and you divide it as you please. A little dry lint separates the cut surfaces for a day or two while they have a tendency to unite, and the wound afterwards requires only to be kept clean. This patient will doubtless get about in the course of a fortnight.

CASE II. *Injury of Finger. Amputation.*—A middle-aged woman, otherwise healthy, two years ago washed her finger, which was slightly pricked, in soapsuds containing bed-bug poison. The finger swelled largely; of which the rational explanation probably lies, not in any specific action of a mineral or vegetable poison, but in an aggravation of some pre-existing tendency to morbid inflammation. The patient applied to a doctress, "good in such cases," who opened an abscess with scissors and poured into it alcohol. After a considerable interval, the part came under proper treatment in the hands of a surgeon, and was healed

its two extreme joints, stiff. This unfortunate member was again laid open, and the bone fractured by a blow a fortnight since; and the tissue of the old cicatrix ulcerating as it easily does, the thing assumed the appearance of a whitlow. Dr. Townsend amputated it at the middle joint, making a very neat flap from the palmar surface. This operation occupies pages in books upon operative surgery, and it is a sort of test of skill in the dissecting rooms. It is quite convenient to know that the distal curved wrinkle on the back of the joint will exactly open the cavity without too much uncovering the bone; and that it is the lateral ligaments which resist most till divided; but it is not often that the regular described operations will apply to the diseased finger. Fingers are often mashed or largely swelled; and unless very near to a joint, the best rule I know, is to get a good covering for the bone, wherever there is a bit of sound and attached skin, and then to divide the bone with forceps, just below it, if you are not at a joint. The arteries play a little, but if the flap is stitched or otherwise fixed in place, and the finger compressed with a narrow bandage, they generally stop without tying.

CASE III. Tumor in the Nose. Operation.—This may be called a tumor of the nose, for it certainly is not anything else. It is, as far as I know, anomalous, and is a most extraordinary affair. It came like a polypus, and looked like one; but it certainly is no polypus. The woman is about 40 years of age, and has been otherwise healthy, till within a few months, since when she has lost flesh. Her attention was called to the pain in the nasal and ethmoid bones, about nine years ago, when, after a good deal of pain and some constitutional disturbance, a "gathering broke," and there was a discharge of fetid pus from the left nostril. This occurred at intervals afterwards; but about five years ago she expelled, by blowing from this nostril, a bit of white thick soft matter. This has occurred several times since, and twice a mass of it as large as the last joint of the little finger. This sort of account is very common. There is a class of patients who are made very unhappy by what they blow from their noses, and there is sometimes disease and sometimes not. "White matter" often means only abundant opaque mucus. So that this account alone was quite unsatisfactory, except that inspection of the nose showed what appeared to be an ordinary polypus high in the left nostril. Its history went to confirm its character. It "caine down," that is, came forward and in sight, a few weeks ago. Since last April it has been gradually obstructing the air on this side, and at present the stoppage is complete; the patient vol-

unteering the statement that it was larger in damp weather. Common polypi are so, and with present evidence, this was likely to prove such. The operation, as you saw, was performed in the ordinary manner. I introduced a pair of oiled polypus forceps so as carefully to include the tumor, shut the handles tightly, and after one or two twists brought out the closed instrument, containing in its grasp what appeared to be—nothing. I mentioned, at the time, that this was a common experience ; that a polypus of some size, when its contained serum has escaped, often leaves only a collapsed bit of mucous membrane, concealed between the blades of the instrument, to account for a considerable obstruction removed. The forceps here showed only a little pasty material at their extremity. They were again introduced, and with the same result ; but at this time the patient blew from the nose a fragment of this paste. Repeated introduction of the forceps, alternating with the expulsive effort, at last cleared the nasal passage by the evacuation of two good teaspoonsfuls of the same material. This was a dirty white paste, perfectly destitute of obvious organization, about the consistence of white lead, smooth, homogeneous, and with a faint smell of macerating bone. Under the microscope it showed only very minute granular material, a very few small cells here and there, and occasionally fragments of fine fibres ; the whole field presenting the aspect of common tartar taken from the teeth, more nearly than anything I know, but without calcareous deposit, and exhibiting only fragments of the long and fine fibres discovered in tartar.

The question is then upon the nature of the affection. Is this, polypus alone, mucous, fibrous, or malignant ; or is this material superadded to polypus, or connected with it ? It is obviously something foreign to the usual history of the affection. We have sometimes calcareous concretion in the nares, but apart from its resemblance to non-calcareous tartar, this material has no evident affinity of that sort. The early progressive character of its history now becomes of interest, and we may infer that what was once a slight is now an aggravated lesion ; and that it was once attended with exacerbations accompanied with headache and terminating in a discharge of pus. This would suggest some chronic affection of the bone, perhaps tubercular. But I know of no regular affection of the antrum or ethmoid resulting in this, and it seems improbable that a soft secretion should accumulate in such quantity in the nares without becoming disintegrated and semifluid to a degree which would facilitate its escape. With these speculations, and preferring to give a curious case in its actual, though it may be temporary aspect, I leave it for the present.

MONDAY, DEC. 16, 1850. *The Case of Hernia** treated by the injection, into the ring, of thirty drops of the tincture of iodine, left the house, "well," in three weeks after the operation. Before the operation, the intestine came down during exertion, even with a truss; and if the truss was removed, it slipped out at once, without effort. When the patient left, he could cough in the erect posture without a truss, as you saw, without the appearance of the hernia. During the first three days there was tenderness exactly at the ring; but no peritoneal or constitutional symptoms. He constantly wore a bandage or a truss, and is now "cured," if he will but remain so. Time only can show what effect the absorption of the lymph will have. On the other hand, his condition has been undoubtedly improved, with slight risk and pain, and less than three weeks' confinement.

The patient with anomalous affection of the nose† has been discharged, considering herself greatly relieved. When the coagulum had been, in the course of a day or two, cleared from the nostril, the original "polypus" showed itself as a fold of thickened mucous membrane, dependent from the upper turbinated bone. This was easily removed, but this had not obstructed the nostril, which had been already cleared.

CASE I. Nasal Obstruction. Operation.—Another patient has left the house relieved of a difficulty which seems to have excited some interest. This young girl had been supposed to have a tumor in the front part of her left nostril; says she had some pain there, and that respiration was not free. I found something reaching from the vomer over towards the left lower turbinated bone, which it met. Both mucous coverings were swelled, and at their point of contact, white, as if suppurating, and exquisitely tender if touched by a probe. In the other nostril, a little way back, there was a sudden hollow in the vomer, which could be felt by a probe better than seen; and this depression corresponded to the other prominence. So that all I was able to make of this "tumor" was a deviation of the vomer, which, projecting across, against the turbinated bone, was ulcerated and tender. Nitrate of silver was applied several times, relieving the tenderness; but finding that it was not effectual, I removed the turbinated bone in part with polypus forceps, then with an oiled finger forced the vomer back to its place, and left a sponge in the nostril to keep it there. The face became swelled and painful, and the patient quite feverish, till the fourth day, when the sponge was removed.

* See Lecture, Nov. 16th.

† See Lecture, Dec. 2d.

She then soon recovered, and left the house as she said "cured;" the nostril being well opened.

CASE II. Club Foot. Operation.—The tendo-achillis was divided by Dr. Hayward. There were one or two points of interest in this case. It was in a child of six, paralyzed in the lower limbs during four years, but recovering the use of the limbs the last year. Paralysis is a common cause of slight club foot, but not of the hopeful forms of it. In other words, the paralysis itself makes the operation useless. It acts unequally on the flexors and extensors, and the gastrocnemius, aided by the natural position of the foot, gets the advantage, so that the foot cannot be flexed. If the paralysis continues, it is useless to divide the tendon; but here the patient could walk. This limb measured one inch less, from the knee down, than the other. This difference puts some bad cases of club foot beyond the reach of art. It is an arrest of development, due in part to the traction of the tendons, but more to a continuance of the original action which produced the deformity. Of course, a muscle may be greatly reduced in size from disease, and even undergo the fatty or fibrous transformation, and still recover its texture and tone after the foot is brought straight. But in the hopeless cases, the long bones are actually shorter and smaller, and no orthopedic treatment will restore their dimensions. In this case the heel will readily come down.

CASE III. Epithelial Disease of Face. Operation.—This was a large pimple upon the skin over the malar bone of an old lady. This pimple is very common on the face in old people, and it is important to know it by sight. It is the "cancer of the lip" occurring elsewhere. You saw here two pimples, side by side. One, the old lady said, she did not care for; it had been there always. It was flabby and pediculated. It was, in fact, a "pediculated tumor," so called, and harmless. But the other, though smaller, gave her great pain; it was only of a few years standing, red, elevated, and hard. At its summit was a little scab. I removed the whole with the knife, and by a long ellipse, to avoid a pucker at the extremities of the united incision. Bisected, this tumor was dense and opaque white; continuous laterally with the skin, and continuous below with the white fibre of the cellular tissue upon which it was seated. In the microscope it was distinctly epithelial, like the lip described in a previous lecture, and just as capable of ulceration. An old man applied to me, a short time ago, with a large everted, ragged, and ulcerated elevation on the cheek, under the eye, adherent to the

bone. It was past much hope of benefit from operation, but doubtless was once an epithelial pimple, which could have been easily and radically removed like this.

CASE IV. Inverted Toe-nails. Operation.—Many of you know this affection. The great toe-nails are buried, as in this case, at their edges, deep in fungous granulations, so tender that they cannot be touched. This begins gradually, with a tight shoe, or an irritable skin, and a nail uncut at the corner. The flesh gets tender, the corner cannot be got at, and the affection progresses or remains stationary. It rarely improves even with palliative treatment. I once raised a nail slowly, with lint beneath it, so that in a week the corner was cut off, and the patient never again suffered. But you are generally obliged to remove the nail or a part of it. The patient is etherized, and if the nail is thin, you thrust one leg of a pair of forceps under it to the root, shut the forceps upon the nail, twist it first to one side and then to the other, and extract it, as was done here. If it is thick, first split it to the root with scissors thrust under it, and peel off one or both halves from tip to root, with forceps. These nails came out whole, but the nail should in general be examined after extraction to see if the corners of the soft root are square, as a bit is often left in at the edge which reproduces the deformity. A new nail generally appears, sometimes deformed. In this case, Dr. Hayward removed three nails.

CASE V. Fatty Tumor inside of Cheek. Operation.—This middle-aged woman perceived this tumor 4 years ago. Its position, just inside of the labial commissure under the mucous membrane, is a common one for little sacs containing glairy fluid. This looked like one, and fluctuated; but proved to be common adipose tissue, as large as a chesnut. I removed it with a simple incision. The ether was continued to this patient sometime after narcotism, and until she snored; her pulse being only reduced a little in frequency. This thorough dose lasted her through the operation. With a common dose, she would soon have partially waked, shut her mouth, groaned and twisted about; and after vain efforts to get along, we should probably have stopped the operation to give her more ether. As it was, she slept tranquilly through it.

CASE VI. Disease of Antrum. Operation.—This patient of Dr. Hayward, 32 years old, a year ago perceived a swelling just under the edge of the left orbit. When opened, it discharged pus. Soon an open-

ing formed spontaneously over the second molar, thought to be a gum-boil, but a copious and daily discharge of pus here discredited this idea. The patient applying to a surgeon, a probe was passed into one opening and out of the other, traversing the antrum ; since which, this antrum is said to have been punctured twice, and a seton to have been once passed. Lastly, foetid pus has been and is now blown from the nostril.

Here is a well-marked affection of the antrum ; and attention may be directed on the one hand to the mucous membrane and bone of the cavity itself, and on the other to the fang of a tooth and abscess of the gum, as the usual causes of such purulent accumulation in this sinus. Here the first pus escaped near the orbit, where there is now a scar ; and the discharge is now foetid ; considerations which direct us to the antrum and to the bone. It is a case difficult of treatment. The patient was desirous of an opening into the cavity, which Dr. Hayward made by boring through the thin shell just above the second molar tooth. Some of you may remember a similar case in my wards last year. Great pain and tension on the left side was then relieved by tapping the antrum in this same place. Pus escaped ; and the patient, encouraged by the success, was very desirous to have the other side opened ; there being an uneasy feeling there. I advised him against it, for want of indications ; but subsequently, as the operation is in reality a small affair, yielded to his solicitation. There was no pus, and the jaw swelled largely. In the first instance the opening evacuated pus and was a relief. In the second, it was an injury to a comparatively sound part, and was at once felt. As to the operation, if you do not perforate the socket of a tooth, you find the base of the zygomatic arch above the molars ; incise the mucous membrane freely, and expose the bone ; otherwise the blood is apt to distend the tissues, and make the landmarks obscure. You then bore through the thin bone with any convenient instrument. I have used a three or four square pyramidal point.

CASE VII. *Hydrocele.*

CASE VIII. *Hydrocele.*—Two more cases, illustrating the varieties of this affection. One in a young man, and of 3 or 4 years standing ; the other in an old man, and of 8 or 10 years duration. The former and smaller had a constricted middle, giving it an hour-glass shape. The latter was the longest and narrowest I have seen ; extending from the ring to the bottom of the scrotum, nearly 7 inches, and only 2 and 3 inches in diameter. These forms are accidental ; both were translucent. The small one was injected with a drachm of tincture of iodine and a

drachm of water, of which half was withdrawn. The other operation was only palliative. It is generally not worth while to expose a very old person to the risk of inflammation; though I have operated upon a man above 80, by incision, and successfully; yet it is generally better not to do so. As an example of the effect of the palliative operation, I may mention the case of a man of nearly 90, whom I tapped six years ago, and only twice since; the fluid collecting slowly; and the risk or pain of the puncture is small. You can diminish the pain by thrusting the instrument suddenly in and not slowly. Of course you make the sac tense and thin, avoid the testicle, and guard the canula with your forefinger at a short distance from the point to prevent it from plunging too deeply. A patient who had before been operated upon slowly, remarked to me, after this sudden puncture, that he must have been before tapped with a screw auger. Another point in the radical operation, is to carry the canula well home into the sac, and to hold it there by pinching the sac, otherwise you may inject the cellular tissue instead of the cavity of the tunica vaginalis.

The two other patients have gone out well, each in two and a half weeks from the operation. In one, there was at the end of the first week a distinct crepitus on pressure of the sac; no doubt from the breaking of little cells of lymph containing water. It is interesting, in connection with a rare and exceptional subcrepitus due to the same cause in the pleura; and which is to be distinguished from the moist rales of the pulmonary cells and tubes.

CASE IX. Stricture of the *Œsophagus*. Dilatation.—The pathology of this affection we reserve for another day. The difficulty, to those unaccustomed to its use, of passing the probang, consists mainly in its being brought up hard against the vertebrae behind the pharynx, if the instrument is stiff. To avoid this, the head is thrown well back, and if need, a finger of the left hand carried past the epiglottis to bend and guide the instrument in the œsophagus. By doing this, you will avoid the danger of pumping a pint of broth into the lungs with a stomach pump, as was once done.

MONDAY, JAN. 20, 1851. CASE I. *Fatty Tumor beneath Fascia*.—The first patient upon whom you saw an operation performed on Saturday, was a boy with a large tumor extending round the arm in the deltoid region. It was of seven years gradual growth, and had now become bulky and inconvenient. It offered some quite uncommon features. Large fatty tumors are common enough in this region. I removed one weighing four and three quarter pounds from the arm of an old lady who was soon quite well. "*Shoulder-strap tumors*," which lie over the outer triangle of the neck, are popularly supposed to be produced by the rubbing of the dress upon the shoulder, and are of this nature. The back is a common place for them; and the female breast also. In short, they grow almost everywhere, and directly under the skin. I had one patient in whom the existence of six or eight in various places, showed the disease to be constitutional. From all these places the removal of the fatty tumor is usually a small matter; excepting, perhaps, the back of the neck. The mass lies in the cellular tissue; and where this is lax, by distending it, it grows with few lobes; but where the surrounding fibres are dense, they cut it up into numerous lobes. Now the fatty tumor has a habit of getting through an aperture in the cellular tissue or anything else, and of growing upon the other side into a lobe too large to be drawn back through the same hole; so that you must cut or tear the band of fibres at the neck of each lobe, and then the whole mass very readily and neatly turns itself out of its bed. But suppose the cellular tissue to be so dense and close, as about the *ligamentum nuchæ*, that you cannot tear it; while for the same reason the tumor has been cut up into a great number of little lobes, each tied by its neck into a little cavity; to dissect all these would be endless; and you are obliged, as has twice occurred to me, to take out from the back of the neck the whole mass, wrapped up in the cellular tissue. It is quite like removing a breast, but less easy because there is more resistance; and this even where the tumor has previously seemed to be very loose and moveable. Elsewhere, cut well down upon the tumor; keep it dissected clean; cut on the tumor and not into its neighborhood, and you will have no difficulty. In the present case you saw six inches of the brachial artery and vein dissected quite clean and exposed. You often hear of large vessels being exposed in the removal of a tumor. Do not get the idea that they are purposely denuded, or that such a dissection is made with the intention of enucleating them. It is not so, and you will readily see how it happens. A tumor grows beneath the fascia, and presses upon the neighboring cellular tissue, which is absorbed before it until in fact it lies directly against

a large artery and vein. Now you will find that in dissecting, you can often draw the tumor away from these vessels, so that keeping the edge of your knife always against the tumor, it may, perhaps, never be nearer than an inch, to the vessels; and yet when the mass is out, and you examine the bed in which it laid, you will find the large artery and vein just as near to the surface as they were to the tumor; perhaps, as in this case, bare, and directly upon the surface.

The present tumor extended quite round the arm, beneath the long head of the triceps, and on the inside had pushed under the brachial artery and vein. It was also traversed by an artery as large as the facial, and indented by the internal cutaneous nerve. It began, small, near the insertion of the deltoid. I stated to you that it had all the feel of a fatty tumor; lobulated outside; less so, but large and fluctuating, on the inner aspect. The only doubt was in the fact that fatty tumors do not belong beneath the deep fascia, where this evidently was. They almost always grow directly under the skin. I never saw one thus deep, before. Yet such are recorded, one beneath the trapezius and one beneath the mamma. So that in making the diagnosis, I mentioned fatty tissue as the probable material, apart from its anomalous position which made it a little doubtful. I made a long incision inside the biceps, and separated the tumor from the artery, vein and internal cutaneous nerve. A parallel incision six inches long was then made outside the arm near the triceps, and the chief obstacle to the removal of the tumor was found to be its close attachment here by its membranous septa to the periosteum itself. These divided, the aperture beneath the triceps was dilated up and down, and the tumor was then drawn out through this opening under the muscle and the external incision. It weighed one pound and four ounces.

CASE II. Disease of Ankle-joint. Amputation.—This patient, from Dr. Hayward's ward, had during a period of seven years more or less pain and lameness in the joint. For a year he has been unable to use the limb, and during this time quite a number of fistulous openings communicating with the joint, have appeared; I believe a dozen—an unusual number. The joint is, you see, swelled and blue, and the leg atrophied, almost to the bones. About such a leg there can be no doubt. Whatever the disease may be called—scrofulous disease, pulpy, cartilaginous or synovial degeneration, or disintegrating lymph, there is, practically, very little hope in a case of this sort. In a favorable case, the diseased cartilage and bone should and might become disintegrated

to a point which leaves sound bone, and this in its turn should become ankylosed. This is the only recovery from such a mass of disease. But in the mean time the pain and fever are reducing the patient; the liquor sanguinis is drained by the discharge of pus, and the strength gives out. There is a peculiar disease, the ulceration of the cartilage, in which a small ulceration in an otherwise apparently sound cartilage is productive of great pain, and often compels amputation of a limb. But the present affection, which is by far the most common one, exhibits no clean ulceration. You see in this joint a part of the cartilage roughened; elsewhere more deeply pitted, and largely detached; the bone exposed; masses of granulation; the whole articular surface greatly diseased, and very little or no sound cartilage. The affection has also extended to the tarsal articulations. The progress of this sort of disease is usually not steady, but by repeated exacerbations, with intervals of comparative freedom from pain; and the patient may be reduced so gradually that it is sometimes difficult for the surgeon who sees the case, day after day, to decide the precise point at which treatment should be abandoned, and amputation resorted to. Seeing the same case for the first time, you would have less difficulty in making up your mind.

A patient greatly reduced by a diseased joint, often recovers rapidly after its removal. Yet even then, life sometimes flickers feebly for a time, and the patient sinks under the shock of amputation. Perhaps the chief point to be settled, in respect of strength, is the soundness of the great viscera; for with disease there, and in spite of a few recorded cases to the contrary, the case is almost hopeless.

This limb, long past the stage of doubt, was removed by Dr. Hayward, by the circular operation.

You will hear much of the relative advantages of the circular and flap operations. But as there is so much diversity of opinion upon this point, you may be sure there is no settled best way; and as for the rapidity of amputation, if ever it was a prime object, with ether it is now no longer so. The one thing needful is skin enough to cover the bone. If one side of a limb is ulcerated or injured, you get it from the other side, and this is a flap; or you may make two flaps—on the sides, or top and bottom, or as you please, so long as you cover the bone and do not waste material; for the best artificial limbs are now made with deep sockets, and the longer a stump is, the better. This flap was circular, and the stump will be doubtless an excellent one, reaching two thirds way to the ankle. Accidents may happen to all stumps. Flaps retract, bones protrude and sequestra come out. But if

the bone is once properly covered, nature has much more than the surgeon to do in keeping it so. I once had an opportunity to try the circular and flap operations upon the legs of the same patient : a case of mortification of both legs, after dysentery on shipboard. The patient was at death's door, but at once rallied after the removal of the legs at about their middle. It was soon after the use of ether ; and the patient, of course, slept through both amputations. Both wounds healed by first intention. The circular flap was puckered in healing, as it generally is. Upon the other leg, the long flap from behind gave apparently much the best result ; a handsome rounded stump, with a linear cicatrix. Yet it is probable that a few years would make them much alike. The muscle and fat of a large flap is then atrophied and the roundness lost. This I may state also as the view of Dr. Townsend, whose opportunities for examination were frequent during the last war.

CASE III. *Necrosis of the Humerus. Operation.*—The disease was in this case of fifteen years' duration. There were a number of fistulous openings about the deltoid, leading to dead bone. A large one also between the clavicle and scapula above, traversed by the omo-hyoid muscle, which bisected it. Water injected here, was followed by an increase of pus at the lower opening, in the course of the day. I am unable to say why the pus, which was burrowing about in the axilla, should have made this large ulceration so high up ; or whether this depended on a separate cause. As you saw, I made a free incision down to the bone on the outside, and through the deltoid ; waited for the capillary bleeding to cease, and tied a small vessel or two ; denuded the bone, removed a middle-sized disc of new bone quarter of an inch thick, with a trephine upon a bit-stock, and extracted through the opening a sequestrum in shape like a large almond. The object of these operations is to get at and remove a sequestrum which is confined by bone, generally of new formation and thick. In such a case you feel with a probe a bone unequivocally loose and apparently quite accessible ; you cut through the soft parts in pursuit of it, and are suddenly, perhaps to your surprise, arrested by a bony wall with an aperture only as large as a crow's quill, into which the probe passes perhaps half an inch. The old way was to attack this with a chisel and mallet. But put a femur into a common vise, and try with a chisel and mallet to expose the interior of its shaft, and you will find how slowly the work goes on. Now there is a French instrument which I have used for a number of years, which consists of a small circular saw, attached to an iron rod, which receives

its revolutions from a bit-stock in the hands of an assistant. The rod is about two feet long, and is broken for convenience by a universal joint. A hole is trepanned into the bone, and if the sequestrum is refractory, another hole is also trepanned a few inches distant, and the circumferences of each united by parallel lines, so as to make an oval hole. This last is done by the circular saw (*scie à molette*), and the little time it occupies and the facility of its work are quite striking. I should say it required about one minute for ten consumed by the old process ; and a beautifully symmetrical hole may be made in five minutes, which would require half an hour's work of the chisel. This is really an advantage of importance. Here are sequestra which I have removed in this way ; a long one from the femur ; this one, not unlike a butternut in size and roughness, and moreover infiltrated with salts from the saliva, from the left ramus of the jaw. Here is a very remarkable sequestrum from a boy, a patient of Dr. Osgood, of Saxonville, which is actually two thirds of the humerus. Its upper extremity projected through the skin just under the axilla, while the whole articulating surface at the elbow was salient and exposed obliquely outwards. The whole looked somewhat like a large spike of which the condyles represented the head ; driven in obliquely at the elbow, and its point appearing under the axilla. And here are the marks of the boy's penknife upon the exposed joint, where he amused the tedium of convalescence by whittling it *in situ*. You would have thought, as I did, that it could be pulled out from below, with ease. But it was so bound and clamped by new bone, which pinched it, that I was obliged to remove the last to some extent before it yielded. And it is strange that the boy has a serviceable joint at this day, traversing an angle of about 45°.

Here is another sequestrum with a wisdom tooth in it, larger than you would suppose could be contained in the ramus of the jaw. Necrosis is sometimes rapid. I removed this from a patient of Dr. Dale. It was eliminated from the first metatarsal bone of a boy in a few weeks, and is, as you see, quite a piece of the shaft.

This operation has its reverses. Here is a femur of a patient, of two years ago, in a case where the fistulous opening was directly in the track of the artery, and where it could not be pursued. I therefore attacked the bone upon the outside through the *vastus externus*, and made this opening into it. The patient, a healthy laborer, died the next day of a remarkable affection ; a secretion of pus beneath the layers of deep fascia and into the muscles of the whole thigh, showing universal inflammation there. Besides which, before death, the limb was inflated by gas as in a decomposing subject.

There are a few points of diagnostic interest which should be mentioned. The size of the sequestrum may be judged of, sometimes, by the enlargement of the bone, and by exploring it through different apertures. Yet where it is deep, and where these signs fail, the size of the dead bone may be deceptive, and a very small one may give the idea of being large. Its mobility is sometimes unequivocal ; and upon this point there are two signs I have noticed, not, I believe, mentioned in the books, to which I attach some value. One of these is the possibility of causing pus to escape from one fistulous opening, by pressing upon the sequestrum with a probe through another and separate aperture. How is this likely to happen, unless the sequestrum moves ? Again, pain, not a common local and acute tenderness, but a deep and distant pain, sometimes attends the forcible movement of a large sequestrum by a probe in a fistulous opening. The sequestrum is then tilted against soft granulations at a remote part of the cavity. In such cases, the sooner the sequestrum is removed, the better. The pathology of necrosis belongs to another part of our surgical course.

